Enumeration of the ARCTIC PLANTS collected by Dr. I. I. Hayes in his Exploration of Smith's Sound, between parallels 78th and 82d, during the months of July, August and beginning of September, 1861.

BY E. DURAND, THOS. P. JAMES AND SAML. ASHMEAD.

Although the following enumeration does not contain any new plants, it is, nevertheless, sufficiently interesting in other respects not to be passed unnoticed. In a geographical point of view, it exhibits the peculiar vegetation of the most northern portion of the globe as yet visited by civilized man, and illustrates several facts which are not devoid of interest.

In his Arctic exploration, Dr. Hayes has been very active in collecting specimens in the different branches of Natural History, which he has liberally presented to the Philadelphia Academy of Natural Sciences. His botanical collection, which was placed in my hands, was not so numerous in species as that of his predecessor and former Arctic companion, Dr. Kane; but the latter had collected along the whole western coast of Greenland, from 65° upwards, whilst Dr. Hayes' collections have been confined to the limits of the 78th and 82d parallels, where, naturally, a greater scarcity of species was to be expected.

From those extreme Arctic latitudes, in which the thermometer of Fahrenheit scarcely ever reaches 55°, with the ground continually frozen and mostly covered with snow, Dr. Hayes brought seeds, apparently in a perfect state of maturity; and also some living roots, imbedded in their own rich soil, and carefully packed in boxes. Among those roots, with their somewhat withered stems, could be recognized *Salix Arctica* and *S. herbacea*, *Tofieldia palustris*, and *Ranunculus nivalis*, large tufts of *Andromeda tetragona*, *Armeria Labradorica*, *Silene acaulis*, &c. All these, at their arrival in Philadelphia, in the beginning of January, 1862, were entrusted to the care of our fellow-member, Mr. Kilvington, a skilful horticulturist, who resorted to every means his experience and ingenuity could suggest, to insure their vegetation.

Some of the seeds, those of the *Cruciferæ* especially, germinated well and put forth the primordial leaves; the roots began early to show signs of vegetation; the buds of the willows enlarged, but never arrived at expansion. *Andromeda* gave some hope of success, and *Lycopodium annotinum* and a species of *Hypnum* resisted the longest. But as soon as the plants ceased being supplied with ice and snow, they began to droop and die, the one after the other, and, by the middle of April, not one of those Arctic denizens, except *Hypnum*, remained to enjoy the sweets of our Philadelphia spring.

Another remarkable fact: The Arctic soil, in appearance so rich, in which the roots were imported, had been found to contain numerous seeds that had given expectations of a good harvest of hyperboreal plants. Mr. Kilvington carefully watched them, early in the spring. They were seen, gradually, to swell and burst, but no sign whatever of germination took place in them. Nor in the whole course of the summer and autumn to this day, has that ground produced a single plant germinated from the seeds that must inevitably have been disseminated over it from the neighboring plants in the garden.

Incited by the apparent richness of that Arctic soil, Mr. Kilvington planted in it some species of *Erica;* but they, also, soon languished and would have died had they not been removed to a more genial ground. Evidently, that Arctic soil had become perfectly unproductive out of its ever-frozen zone!

E. D.

PHÆNOGAMOUS PLANTS.

BY E. DURAND.

1.	Ranunculus nivalis, *Linn.*	Gale Point, July 29.
2.	Papaver nudicaule, *Linn. P. alpinum*, Linn.	Every Station, July and Aug.
3.	Hesperis Pallasii, *Torr. and Gr. H. pygmæa*, Hook.	Netlik, Aug. 4.
4.	Draba Alpina, *DC.* var. glabra.	Port Foulke, July.
5.	" " var. hispida, *R. Br.*	" "
6.	" corymbosa, *R. Br.*	Netlik, Aug. 4.
7.	" rupestris, *R. Br.*	" "
8.	Vesicaria arctica, *Richards.*	" "
9.	Cochlearia officinalis, *Linn.*	Cape Isabella, July 28.
10.	Alsine (Arenaria) rubella, var. hirta, *Vahl.*	Netlik, Aug. 4.
11.	Stellaria humifusa, *Rottb.*	" "
12.	" stricta, *Richards.*	" "
13.	Cerastium Alpinum, *L.* var. Fischerianum, *Torr. & Gr.*	Port Foulke, July 15.
14.	Silene acaulis, *Linn.*	Netlik, Aug. 4.
15	Lychnis apetala, *Linn.*	" "
16.	" pauciflora, *Fisch.*	" "
17.	Dryas octopetala, *Linn.*	" "
18.	" integrifolia, *Vahl.**	" "
19.	Potentilla nivea, var. pulchella. *P. pulchella*, Hook.	Port Foulke, July.
20.	Potentilla nivea, var. hirsuta. *P. hirsuta*, Vahl.	Netlik, July and Aug.
21.	Alchemilla vulgaris, *Linn.*	" July 12.
22.	Saxifraga oppositifolia, *Linn.*	Gale Point, &c., July and Aug.
23.	" flagellaris, *Willd.*	" " 27.
24.	" cæspitosa, *Linn.* var. uniflora.	" 23.
25.	" rivularis, *Linn.*	Netlik, Aug. 4.
26.	" trieuspidata, *Retz.*	Port Foulke, July 15.
27.	" cernua, *Linn.*	" "
28.	" nivalis, *Linn.*	" "
29.	Leontodon palustre, *Linn.*	Netlik, Aug. 4.
30.	Campanula rotundifolia, *Linn.*, var. linifolia, *Gr.*	Tessuissak, Sept. 4.
31.	Vaccinium uliginosum, *Linn.*	Netlik, Aug. 4.
32.	Andromeda tetragona, *Linn.*	Port Foulke, July and Aug.
33.	Pyrola grandiflora, *Raddi. P. Grœnlandica*, Horn.†	Tessuissak, Sept. 4.
34.	Bartsia alpina, *Linn.*	" "
35.	Pedicularis hirsuta, *Linn.*‡	Port Foulke, July and Aug.

* I have no doubt of the correctness of Chamiso and Schlechtendal's view, "that *Dryas integrifolia* is the more Arctic form of *D. octopetala* of Linnæus." Almost all the specimens of Dr. Hayes were with narrow, entire leaves, but some exhibited the intermediary forms of both varieties, and a single one was a perfect specimen of *Dryas octopetala*.

† Dr. Jos. D. Hooker, in his "Outlines of the Distribution of Arctic Plants," (Trans. Linn. Soc. Lond., Vol. xxiii. p. 2.) is perfectly right in suspecting *Pyrola chlorantha* of my Plantæ Kaneanæ to be *P. grandiflora*, Raddi. This I have ascertained to be the fact, on the better specimens brought by Dr. Hayes.

‡ *Pedicularis hirsuta*, L. Was fairly represented both in Dr. Kane's and Dr. Hayes' collections. It appears to be much more common, in those hyperboreal regions, than either *P. Langsdorffii* or my *P. Kanei*, of which Dr. Kane brought only a single specimen, that has been submitted to Prof. Asa Gray. In his Enumeration of Dr. C. C. Parry's Plants of the Rocky Mountains, (Am. Jour. Sc., Vol. xxxiv, 2d ser. p. 251,) Dr. Gray expresses himself in the following words, with regard to some,

36. Armeria vulgaris, *Willd.* var. *A. Labradorica*, Vahl. — Netlik, Aug. 4.
37. Polygonum viviparum, *Linn.* — " "
38. Oxyria digyna, *Campd.* — Every Station, July and Aug.
39. Empetrum rubrum, *Willd.* Spec. Pl. 4, p. 713. (A variety of E. nigrum ?) * — Tessuissak, Sept. 4.
40. Betula nana, *Linn.* — Port Foulke, July 15.
41. Salix arctica, *Linn.* — Every Station, July and Aug.
42. " herbacea, *Linn.* — Port Foulke, July 15.
43. Tofieldia palustris, *Linn.* *T. borealis*, Vahl. — " "
44. Luzula campestris, var. congesta, *Wahl.* *L. hyperborea.* of Danish authors. — Tessuissak, Sept. 4.
45. Carex rigida, *Good.* — Netlik, Aug. 4.
46. Eriophorum vaginatum, *Linn.* — Gale Point, July 27.
47. Alopecurus alpinus, *Linn.* — Port Foulke, &c., July.
48. Glyceria arctica, *Hook.* — " " 15
49. Poa arctica, *R. Br.* — " " "
50. Poa Vahliana, Bot. Dan.? (Too young.) — " " "
51. Hierochloa borealis, *Roem. and Schl.* — Tessuissak, Sept. 4.
52. Festuca ovina, *Linn.* — " "

CRYPTOGAMOUS PLANTS.

LYCOPODIACEÆ.

53. Lycopodium annotinum, *Linn.* — Tessuissak, Sept. 4.

Musci and Lichenes were placed in the hands of Mr. Thos. P. James, the excellent cryptogamist, who has returned them with the following note: "I return the *Musci* and *Lichenes* from Dr. Hayes' Arctic expedition. I have named them as best I could, from their imperfect condition,—not a single fruiting specimen was to be found in the entire collection! This fact rendered their determination the more difficult. Several, which I could not determine, may be new species, but they were not in a state clearly to be analyzed."

MUSCI.

BY THOS. P. JAMES.

54. Andræa petrophila, *Ehrh.?*
55. Barbula ruralis, *Hedw.*
56. Orthotrichum affine, *Schr.*
57. Grimmia spiralis, *Hook. & Tayl.*
58. Racomitrium lanuginosum, *Brid.*
59. Pogonatum alpinum, *Brid.*
60. Polytrichum juniperinum, *Hedw.*
61. Aulacomium turgidum, *Schw.*
62. Bryum Duvallii, *Voit.*
63. " purpurascens, ?
64. " arcticum, *Brid. & Sch.*
65. " rutilans, *Brid. & Sch.*
66. " cyclophyllum, *Brid. & Sch.*
67. " crudum, *Schr.?*
68. " nutans, *Schr.*
69. " palustre, *Linn.*
70. " æneum, *Blytt.*

Arctic Greenland species of *Pedicularis*: "*P. Kanei* of Durand does not belong to *P. Sudetica*, as Dr. Hooker supposed, but to *P. lanata*, Willd.; which again, contrary to Bentham and Hooker, I must regard with Bunge as clearly different from *hirsuta* of Linnæus; it is much nearer another species which Dr. Hooker refers to *Sudetica*,—viz: *Langsdorffii*, with which it has been confused; but it is perfectly edentulate. The teeth of the latter, however, are inflexed, and so may escape observation. All these species are well discriminated by Bunge, in Ledebour's *Flora Rossica*.

* Drupe red, stems apparently smaller and more decumbent than in *E. nigrum*, from which it does not otherwise differ. Dr. Kane's specimens belonged probably to the same form; but having no fruit on, I referred them, naturally, in my *Plantæ Kanenæ*, to *Empetrum nigrum*.

It is a remarkable fact of geographical botany, that this red-fruited species, originally found on the shores of the Strait of Magellan, should appear again at the opposite extremity of the American continent. Messrs. La Pylaie and Tuckerman met with it in Newfoundland, and, quite lately, Abbé Ferland, a Catholic missionary of the Laval University of Quebec, found it likewise on the coast of Labrador, together with *Empetrum nigrum*.

71. Mnium affine, var. rugicum, *Bland.*
72. " rostratum, *Schw.*
73. Meersia Albrotinii, ?
74. Bartramia, aff., calcareæ.
75. Conostomum boreale, *Swartz.*
76. Splachnum Wormskioldii, *Brid.*
77. " vasculosum, *Linn.*
78. Hypnum uncinatum, *Hedw.*
79. " aduncum, *Linn.*
80. " oligorrhizon, *Brid. & Sch.*
81. " nova species?

LICHENES.

BY THOS. P. JAMES.

And submitted to Ezra Michener, M.D.

82. Alectoria bicolor, (*Ehrh.*) *Nylander.*
83. " sulcata? (*Lev.*) *Nyl.*
84. " ochroleuca, (*Ehrh.*) *Nyl.*
85. Lecanora ventosa, *Ach.*
86. Neuropogon Taylori, *Hook., Nyl.*
87. Platysma cucullata, *Hoff.*
88. " nivalis, *Ach.*
89. Plocadium elegans, (*Ach.*), *Nyl.*
90. Parmelia saxatilis, (*Linn.*) *Ach.*
91. " Borreri, *Turner.*
92. " stygia, (*Linn.*) *Ach.*
93. " conspersa? (*Ehrh.*) *Ach.*
94. Dactylina Arctica, (*Rich.*) *Nyl.*
95. Stereocaulon denudatum, *Floerk.*
96. " condensatum, *Hoff.*
97. Cladonia pyxidata, (*Linn.*) *Fries.*
98. " furcata, var. racemosa, *Hoff.*
99. Cladonia ignota?
100. Lecidea geographica? *Hoff.*
101. Umbilicaria hyperborea! *Hoff.*
102. Ignota "
103. Verrucaria popularis, *Floerk.*
104. " maura, var. striatula, *Hoff.*

ALGÆ.

BY SAML. ASHMEAD.

105. Fucus vesiculosus, *Linn.*
106. Alaria esculenta, *Grev.*
107. Ulva latissima, *Linn.*
108. Laminaria phyllitis, *Lam.*
109. " longicruris, *Pylaie.*
110. Laminaria fascia, *Ag.*
111. " saccharina? *Lam.*
112. Rhodymenia interrupta, *Grev.*
113. Enteromorpha compressa, *Grev.*
114. Soliera chordalis, *Ag.*
115. Cladophora arcta, *Dill.*
116. Bryopsis plumosus, *Ag.*
117. Desmarestia aculeata, *Lam.*
118. Chætomorpha littorea, *Haw.*
119. Ectocarpus?
120. Ignota.

Additions to the Catalogue of Stars which have Changed their Colors.

BY JACOB ENNIS.

I beg leave to add the following continuation to the Catalogue of six stars which have changed their colors, recently presented as a verbal communication:

7. Procyon. In 1850 Humboldt classed Prosyon among the yellow stars: Cosmos, Vol. 3, p. 182. In a verbal communication to this Academy, Feb. 17th, 1863, I announced that this star is now very decidedly blue; and in this all to whom I have referred the color agree without the least hesitation.

8. Rigel. This star is classed among the white stars by Donati, in a Memoir dated August, 1860, and published in the Annals of the Museum at Florence in 1862. It is now decidedly blue. During the past two months it has been observed by myself and some friends to be one of the most deeply-colored of all the stars now visible in this latitude.

9. Alpha Lyræ, or Vega. Donati, in the Memoir just named, classes Vega among the white stars. Humboldt, in 1850,—Cosmos, Vol. 3, p. 183,—says, "the light of Alpha Lyræ is bluish." To myself it now appears pale blue, very much like Capella.

10. Castor. Donati, in 1860, classed Castor among the yellow stars. Humboldt, in 1850, says, "Castor is a greenish star."—Cosmos, Vol. 3, p. 177. It appears to me greenish now,—March, 1863.

There is a close cluster of more than a hundred stars, known as Kappa

[Mar.